Séminaire Brain

Jeudi 02.12.2021
Horaires :
De 14:30 à 17:00

Adresse :
Grand Amphithéâtre
IMT Atlantique - site de Brest

Public cible
Enseignants chercheurs
Doctorants
Etudiants
Elèves ingénieurs 1ère année
Elèves ingénieurs 2ème année
Elèves ingénieurs 3ème année
Masters 1
Masters 2

Seminar of the BRAIn Team
Better Representations for Artificial Intelligence

Sophie Achard  Antonio G. Marques

Thursday, December 2nd,
Grand Amphithéâtre of IMT Atlantique (Brest)

2:30 pm: Sophie Achard
Learning from brain connectivity networks

3:50 pm: Antonio G. Marques
Identifying Network Structure via Graph Signal Processing

En savoir +
Sophie Achard - Learning from brain connectivity networks

Abstract
Noninvasive neuroimaging of the brain while functioning is providing very promising data sets to study the complex organisation of brain areas. It is not only possible to identify responses of brain areas to a cognitive stimulus but also to model the interactions between brain areas. The human brain can be modelled as a network or graph where brain areas are nodes of the graph and interactions of pairs are the edges of the graph. The brain connectivity network is small-world with a combination of segregation and integration characteristics. In this talk, I will present recent advances to understand and compare brain data using learning approaches. A particular focus on the reliability of the methods will be given. Finally, examples on various pathologies will highlight the possible alterations and resilience of the brain network.

Antonio G. Marques - Identifying Network Structure via Graph Signal Processing

Abstract
The talk will provide an overview of graph signal processing (GSP)-based methods designed to learn an unknown network from nodal observations. Using signals to learn a graph is a central problem in network science and statistics, with results going back more than 50 years. The main goal of the talk is threefold: i) explaining in detail fundamental GSP-based methods and comparing those with classical methods in statistics, ii) putting forth a number of GSP-based formulations and algorithms able to address scenarios with a range of different operating conditions, and iii) briefly introducing generalizations to more challenging setups, including multi-layer graphs and learning in the presence of hidden nodal variables. Our graph learning algorithms will be designed as solutions to judiciously formulated constrained-optimization sparse-recovery problems. Critical to this approach is the codification of GSP concepts such as signal smoothness and graph stationarity into tractable constraints. Last but not least, while the focus will be on the so-called network association problem (a setup where observations from all nodes are available), the problem of network tomography (where some nodes remain unobserved, and which can be related to latent-variable graphical lasso) will also be discussed.

Organisateur(s)
Equipe BRAInDpt MEE

Contact(s) & information(s) pratique(s)

Visio Webex :
https://imt-atlantique.webex.com/imt-atlantique/j.php?MTID=m35564a26dbca57b4b4ff9f8a11cd96bc

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